Field Trial of the Use of Propionibacterium Acnes, Immunostimulant in the Treatment of Acute Clinical Mastitis

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Heightened public concern over the presence of antibiotic residues has forced the dairy industry to consider alternatives to antimicrobials in the treatment of clinical mastitis. One such alternative is the use of immune modulators which enhance cell mediated immunity and lymphokine production (Cox 1988; McCall 1989). Anecdotal reports indicated that a killed extract of *Propionibacterium acnes* (Propionibacterium Acnes, Immunostimulant; ImmunoVet Inc) was being successfully used to treat chronic clinical mastitis (Douglas 1990). However, no controlled trials have yet been reported that document the success of this treatment.

A controlled field trial was conducted in two parts to study the use of Propionibacterium Acnes, Immunostimulant (PAI), in the treatment of acute clinical mastitis in dairy cattle on a 1500-head commercial dairy. In the first trial, 244 cows were assigned to one of three treatment groups: Group 1=Routine antibiotic therapy in use on the dairy; Group 2=Antibiotics plus 1 cc PAI given intravenously; and Group 3=PAI alone. In the second trial, 91 cows were assigned to three groups: Group 1, as above; Group 3, as above; and Group 4, no treatment. In both trials, the severity of each case of mastitis was graded on a scale of 1 to 3, with Grade 1 given to cows with mild, non-systemic clinical mastitis; Grade 2 to cows with mild to moderate systemic signs; and Grade 3 to cows in severe toxemia. Improvement in clinical severity was evaluated at Days 3 and 7 after treatment in Trial 1, and at 3, 7, 14, and 21 in Trial 2.

No adverse reactions to PAI were seen. The percent of cows with clinical improvement in Groups 1, 2, and 3, respectively, in Trial 1 was: Day 3, 42.8, 47.5, and 46.3; Day 7, 65.6, 68.3, and 72.5. In Trial 2, the percent of cows in Groups 1, 3, and 4 with clinical improvement was 25.9, 32, and 26.6 by Day 3; and 46.8, 48, and 48 by Day 7. The percent of cows in Trial 1 with complete resolution of signs of mastitis in the 3 groups were 44.8, 52.5, and 57.5 by Day 7; and 79.6, 80.5, and 83.3 by the end of lactation. In Trial 2, the percentages were 30.3, 36, and 45.1 by Day 7; and by Day 21, 41.9, 62.5, and 63.3 were normal. Within a given trial, there were slight disadvantages to the use of antibiotics alone as compared to all other groups, including no treatment (Trial 2, Group 4); however, these differences were not statistically significant. At this time, there does not appear to be any clear benefit in the use of PAI, or conventional antibiotics, in the treatment of acute clinical mastitis.

References

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